REMARKS

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A.   **Allowable Subject Matter.**

Applicants would like to thank the Examiner for indicating that claims 8-10 and 15

contain allowable subject matter

B.   **Claim 5 was objected to under 37 CFR 1.75(c) as being of improper dependent form for failing to further limit the subject matter of a previous claim.**

Applicants agree that claim 4 is broad enough to cover regeneration of a sub-set of a state

equation upon a topological change event, as pointed out by the Examiner. Consequently,

Applicants have canceled claim 5 herein, and its rejection under 37 CFR 1.75(c) is now moot.

C.   **Claims 8 and 15 were rejected under 35 USC 112, second paragraph.**

It was alleged in the Office Action that there is insufficient antecedent basis for the

limitation "B^{CA}_{link}" in line 17 of claim 8. It is respectfully submitted that the limitation is

presented as "a fourth branch set B^{CA}_{link}," therefore no antecedent basis is required, as the

limitation is not referencing any prior limitation. It is therefore respectfully submitted that claim

8 is allowable under 35 USC 112, second paragraph.

Regarding claim 15, the Office Action alleges that the claim fails to "explain how it is

possible to have a maximum or minimum of an element." It is respectfully submitted that claim

15 has been amended herein in order to make it clear that the elements in question are controlling

elements of the state vector, rather than switching elements (which are also mentioned in claim

15).

It was further alleged in the Office Action that claim 15 fails to explain the phrase "negative of the minimum of all controlling elements." It is respectfully submitted that the specification as originally filed (at page 7, lines 17-19) states that "falling-sensitive switches change switching state if and only if a controlling element of the state vector has passed from a positive value to a non-positive value." Thus, the "minimum of all controlling elements of the state vector that control falling sensitive switches" in claim 15 is a number having a non-positive value. The "negative of the minimum" referred to in claim 15 therefore converts this minimum number to a positive value. It is therefore respectfully submitted that claim 15 is definite under 35 USC 112, second paragraph.

D.   Claims 8-10 were rejected under 35 USC 101 for being unclear as to whether the calculation or simulation utilize a machine to accomplish the recited steps.

Independent claim 8 has been amended herein to specifically recite a "computer-implemented method." It is therefore respectfully submitted that it is now clear that claims 8-10 represent patentable subject matter under 35 USC 101.

E.   Claims 1-7, 11 and 16 were rejected under 35 USC 102(b) as being anticipated by TINA Pro.

Specifically, the Office Action alleges that the SCATINA reference shows the claim step of "automatically generating a first set of state equations from said one or more data structures." It is respectfully submitted that the TINA software product does not generate state equations. The cited SCATINA reference nowhere indicates that the software program generates state equations to simulate the modeled circuit.

Amendment	Page 10 of 13	Inventors: Wasynczuk et al.
Application No. 10/043,981	Group Art Unit 2128	Attorney Docket No. 31122-12
	CIRCUIT SIMULATION	

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TINA and similar prior art simulation packages are based upon a resistor companion model of inductors and capacitors. The fundamental notion of a resistor companion model is to replace each inductor and capacitor in a circuit with a current source connected in parallel with a resistor. This transformed circuit is called a resistor companion model composed only of resistors and dependent and/or independent current sources. The nodal voltages at the subsequent time step can be calculated in terms of voltages and currents at the given instant of time based upon the solution of a dc resistive network. The formation of the nodal equations for the composite circuit is straightforward and is based upon techniques covered in most introductory electrical engineering courses.

In contrast, the present invention as claimed in claim 1 utilizes a computer develop and solve state equations of the form

$$\frac{d\mathbf{x}}{dt} = \mathbf{f}(\mathbf{x},t); \quad \mathbf{x}(0) = \mathbf{x}_o$$

Given a state model, the transient response can be solved using any suitable state equation solver. The cited TINA software does not use this methodology.

Furthermore, the Office Action (in "Assertion 2") asserts that "the claim limitation does not limit the simulation to take place within a computer system. Therefore, a user of the equations can perform the said simulation." It is respectfully submitted that claim 1 has been amended herein to specify that it is a "computer-implemented method," such that the simulation must be implemented on a computer, and not by the user.

For at least all of these reasons, Applicants respectfully submit that claim 1 is allowable under 35 USC 102(b) in view of the references of record.

Claims 2-7 depend from claim 1 and therefore include all of the limitations of claim 1. It is therefore respectfully submitted that claims 2-7 are allowable over the references of record for at least the same reasons set forth above with respect to claim 1.

Regarding claim 11, the claim specifically requires a processor to "build state equations for a first topology of an electronic circuit." As detailed hereinabove with respect to claim 1, the cited TINA software does not build state equations. It is therefore respectfully submitted that claim 11 is allowable over the references of record for at least this reason.

Regarding claim 16, the claim specifically requires that "said instructions are further executable by said processor automatically to calculate state equations for the circuit." As detailed hereinabove with respect to claim 1, the cited TINA software does not calculate state equations. It is therefore respectfully submitted that claim 16 is allowable over the references of record for at least this reason.

F.   Claims 12-14 were rejected under 35 USC 103(a) as being unpatentable over TINA and further in view of MathWorks.

Claims 12-14 depend from claim 11 and therefore include all of the limitations of claim 11. It is therefore respectfully submitted that claims 12-14 are allowable over the references of record for at least the same reasons set forth above with respect to claim 11.

CONCLUSION

For the foregoing reasons, Applicants submit that all claims are in a condition for allowance, and respectfully request a prompt Notice of Allowance for all pending claims. It should be understood that the above remarks are not intended to provide an exhaustive basis for patentability or concede the basis for the rejections and/or objections in the Office Action.

The original application included 4 independent and 16 total claims, and after the amendments above the application has 4 independent and 15 total claims, therefore no excess claim fees are believed to be due. The Commissioner is authorized to charge the three-month request for extension fee in the amount of $510.00 to the credit card detailed on the attached form PTO-2038. No additional fees are believed to be required with this Amendment; nevertheless, the Commissioner is hereby authorized to charge any fees due, including statutory fees for extensions of time, to Deposit Account No. 23-3030, but not to include any payment of issue fees.

Reconsideration of the present application, as amended, is respectfully requested. If there are any remaining issues that can be addressed telephonically, the Examiner is invited to contact the undersigned to discuss the same.

Respectfully submitted,

By: _____

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